

What is claimed is:

1 A media converter provided with an integrated local information transmission function for performing conversions between signals of an electrical network and signals of an optical network comprising:

a first transmission - reception processing section which performs conversions between the electrical network signals and transmission - reception data in accordance with the transmission format of the electrical network;

a second transmission - reception processing section which performs conversions between the optical network signals and transmission - reception data in accordance with the transmission format of the optical network; and

a media independent interface section which connects the first transmission - reception processing section with the second transmission - reception processing section and performs data interfacing and also generates error signals in a predetermined plurality of frequencies outside frequency bands used for data communication or detects an error signal in a frequency outside the communication frequency bands, wherein

the transmission and reception of local information is performed with media converters that are matched via the optical network.

2 A media converter provided with an integrated local information transmission function comprising:

a first transmission - reception processing section which has a transmission section for performing code conversion and encoding on input data and then transmitting resultant data to a 100 BASE-TX local area network and a reception section for performing

decoding and code conversion on signals received from the 100 BASE-TX local area network;

a second transmission - reception processing section which has a transmission section for performing code conversion and encoding on input data and then transmitting resultant data to a 100 BASE-FX local area network and a reception section for performing decoding and code conversion on signals received via the 100 BASE-FX local area network;

a media independent interface section which connects the first transmission - reception processing section together with the second transmission - reception processing section and performs data interfacing and error signal transmission;

an electrical - optical conversion section which modulates optical signals and sends optical signals to the 100 BASE-FX local area network using signals output from the transmission section of the second transmission - reception processing section;

an optical electrical - conversion section which demodulates optical signals received from the 100 BASE-FX local area network and supplies generated data to the reception section of the second transmission - reception processing section; and

a control section which controls the media independent interface section, wherein the media independent interface section transmits signals in a predetermined plurality of frequencies outside frequency bands used for data signal communication or detects signals in a frequency outside the communication frequency bands based on an instruction from the control section, and performs the transmission and reception of local information with media converters that are matched via the 100 BASE-FX local area network.

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3 The media converter provided with an integrated local information transmission function according to claim 2, wherein the control section gives instructions to the media independent interface section for signals to be transmitted in one frequency or in a plurality of frequencies based on input local information.

4 The media converter provided with an integrated local information transmission function according to claim 2, wherein local information transmitted by the media independent interface section using frequencies outside the communication frequency bands includes control signals, status information, and fault information that includes at least one of twist pair cable abnormalities and power supply abnormalities.

5 A media converter provided with an integrated local information transmission function for performing conversions between signals of an electrical network and signals of an optical network comprising:

a first transmission - reception processing section which performs conversions between the electrical network signals and transmission - reception data in accordance with the transmission format of the electrical network;

a second transmission - reception processing section which performs conversions between the optical network signals and transmission - reception data in accordance with the transmission format of the optical network;

a media independent interface section which connects the first transmission - reception section processing with the second transmission - reception processing section and performs data interfacing and also generates error signals; and

a control section which controls transmission timings of transmission error signals

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and idle signals transmitted from the media independent interface section and causes these signals to be transmitted in combinations, wherein

the transmission and reception of local information is performed with media converters that are matched via the optical network.

6 A media converter provided with an integrated local information transmission function comprising:

a first transmission - reception processing section which has a transmission section for performing code conversion and encoding on input data and then transmitting resultant data to a 100 BASE-TX local area network and a reception section for performing decoding and code conversion on signals received from the 100 BASE-TX local area network;

a second transmission - reception processing section which has a transmission section for performing code conversion and encoding on input data and then transmitting it to a 100 BASE-FX local area network and a reception section for performing decoding and code conversion on signals received via the 100 BASE-FX local area network;

a media independent interface section which connects the first transmission - reception processing section together with the second transmission - reception processing section and performs data interfacing and error signal transmission;

an electrical - optical conversion section which modulates optical signals and sends optical signals to the 100 BASE-FX local area network using signals output from the transmission section of the second transmission - reception processing section;

an optical electrical - conversion section which demodulates optical signals received from the 100 BASE-FX local area network and supplies generated data to the reception

section of the second transmission reception processing section; and

a control section which controls the media independent interface section, wherein as a result of the control section controlling transmission timings of transmission error signals and idle signals transmitted from the media independent interface section and causing these signals to be transmitted in combinations, the transmission and reception of local information is performed with media converters that are matched via the 100 BASE-FX local area network.

7 The media converter provided with an integrated local information transmission function according to claim 6, wherein the local information transmitted by the media independent interface section includes fault information, status information, and control signals.

8 A media converter provided with an integrated local information transmission function, wherein, on the transmitting side, VALID symbols and INVALID symbols are transmitted alternately and, on the reception side, a normal data reception state and an error reception state are alternately generated and the transmission of local information is performed based on the changes in the states.

9 A fault alarm signal transmission system in which

a first media converter installed at subscriber premises comprises:

a power cut detection section which detects a reduction in a voltage of a power supply supplied to the media converter and outputs a power supply abnormality signal;

a control section which outputs a control signal based on the power supply

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abnormality signal input from the power cut detection section;

a layer 1 signal generating section which receives the control signal from the control section and generates a layer 1 signal; and

a multiplexing section which multiplexes encoded transmission data with the layer 1 signal output from the layer 1 signal generating section, and in which

a second media converter installed at station premises comprises:

a layer 1 signal detection section installed so as to match the first media converter via a 100 BASE-FX local area network which detects layer 1 signals from received data signals, wherein

when a drop in the power supply voltage is detected by the power cut detection section, the first media converter halts normal data transmission and outputs a power cut notification signal from the layer 1 signal generating section, and

the second media converter detects the power cut notification signal from the received data signals in the layer 1 signal detection section and outputs a fault alarm signal.

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